

Regional Economic Valuation of Reclamation Plan on the West Coast of Lae Lae Island, Makassar City

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ABSTRACT

The western waters of Lae Lae Island, Makassar City, have extensive reef plate land, which has become the object of reclamation planning in accordance with Regional Regulation No. 3 of 2022 concerning changes in the RTRW of South Sulawesi Province. Reclamation activities can affect the economic value of Lae Lae Island's natural resources. This study aims to estimate the value of economic benefits of resources before and after reclamation, with the objects analyzed regarding tourism, capture fisheries, and coral reef ecosystems. The results showed that the total economic benefit value of resources was IDR 2,043,212,016,-. The projection is that after the reclamation of land and its utilization, there will be an increase in the total economic benefit value of I 3,592,963,254,-. The benefits of existence are projected to rapidly increase after reclamation if tourism development goes well on Lae Lae Island, with adequate facilities and infrastructure support.

Keywords: Reclamation Plan, Economic Valuation, Lae Lae Island

1. INTRODUCTION

Makassar City is one of the largest waterfront cities in eastern Indonesia, with rapid urban development. Considering the balance sheet of urban coastal space, it can be seen that it has not fully shown positive liabilities in improving coastal and marine ecosystems. The cognitive view of government is much different from the visual perception. Of course, the historical perspective of the coast becomes an actual technical reference in the plan and control of resilient and sustainable development (Wankang et al., 2019). Therefore, coastal planning and management is not only land space but also needs adaptive spatial management and ocean management that can help foster social consensus to produce feasible restoration for development in coastal and Island areas.

A series of coastal space planning and development activities in Makassar City in terms of the legality of planning are experiencing spatial pressure due to changes in the 2022 South Sulawesi Provincial RTRW contained in Regional Regulation No. 3 of 2022 have changed the coastal face of Makassar City, which in its legality the Makassar City RTRW has not fully recorded all forms of changes, one of the reclamation activities for the waters of Lae-Lae Island is inseparable from efforts to provide functions ecological for biodiversity (Zhao, Q et al., 2020). This is important considering that in many coastal cases in urban areas, including in Makassar City, coastal and marine space management needs to be more cohesive as institutions differ in their authority.

The consideration of coastal marine areas as a socio-ecological system for the sake of marine biodiversity conservation is still in the space for debate on whether it leads to ecosystem improvement, especially if it touches on the resilience and sustainability of coastal development.

Within two decades of coastal development planning in Makassar City, various activities have been and will be carried out along the 64.58 km coastline (2022 coastline digital data by PPIG BIG, 2023). The construction and development of Lae-Lae Island with reclamation activities, the construction of Makassar New Port (MNP), the

Development of the Integrated Global Business Center Area at Centerpoints of Indonesia (CPI) Phase 2, the Construction and Development of Tanjung Bunga Settlements, and the construction and development of spermonde islands are coastal development plans built on a reclamation basis.

Various arguments and reasons that underlie the big plans above. The threat of abrasion, sedimentation, marine pollution, pollution and global climate issues, which are not only critical points of coastal problems but also empirical inclusion of biodiversity in research on the socio-ecological systems of coastal areas, still has many frictions from its stakeholders (Lazzari., N et al., 2020).

However, the visual view, both physically, environmentally and spatially, has not fully shown that ecological interactions in coastal and marine systems run well and sustainably (Tiantian., MA et al., 2019).

Why are the waters of Lae-Lae Island being reclaimed? Anatomically, Lae-Lae Island is an inseparable part of the coastal face of Makassar City, a place where one of the appreciations of marine tourism is reflected in this place. Lae-Lae Island has long been used as a beach recreation space for residents of Makassar City. In addition to its distance and travel time close to the mainland, this island entity is also an inseparable part of developing the new city *Centerpoint of Indonesia*. It is an essential part of the main sea channel of Soekarno Hatta Port.

Various definitions of reclamation refer to regulations by the government. In the Regulation of the Minister of Transportation No. PM 53 Year 20 21 states that reclamation is stockpile work in waters or coasts that change the coastline and/or contour of the depth of waters. Furthermore, in the Minister of Public Works Regulation concerning Guidelines for Spatial Planning of Coastal Reclamation Areas (2007). Article 1 in this ministerial regulation means that Beach reclamation is an activity on the beach carried out by people to increase the benefits of land resources from an environmental and socio-economic point of view using rugation, land drainage, or drainage. And according to Urban Planning (2013) in Tumbel et al. (2019), reclamation itself means efforts to develop areas that are not or less productive (swamps, both tidal swamps and tidal swamps peat and beaches) into productive areas (plantations, agriculture, settlements, port expansion) by lowering the puddle water level by making canals, making dikes/polders and pumping water out and by rugged.

The condition of Lae Lae Island provides an overview of the potential economic value, with financial turnover from time to time in the trade, crossing services, capture fisheries, and tourism sectors. Reclamation planning in the west of the island can impact the economic value of natural resources and economic activities on Lae Lae Island. To see the development and prediction of monetary value on the island of Lae Lae with reclamation, a financial valuation approach (total economic value) is carried out.

2. METHODS

2.1 Study Area Restrictions

Astronomically, the study area is located at the position of 119°23'08.887" - 119°23' 28.990" E and 05°08'17.444" - 05°07'54.779" S.

Reclamation planning is to the west of Lae Lae Island, so the calculation of the Total Economic Value of the resource is focused on the area, including coral reef areas. The area taken into account is in a land area of 30.78 Ha consisting of a land area of 1.78 Ha, and 29 Ha of sea area which is a reclamation plan area and coral reef area, as well as being a fishing location.

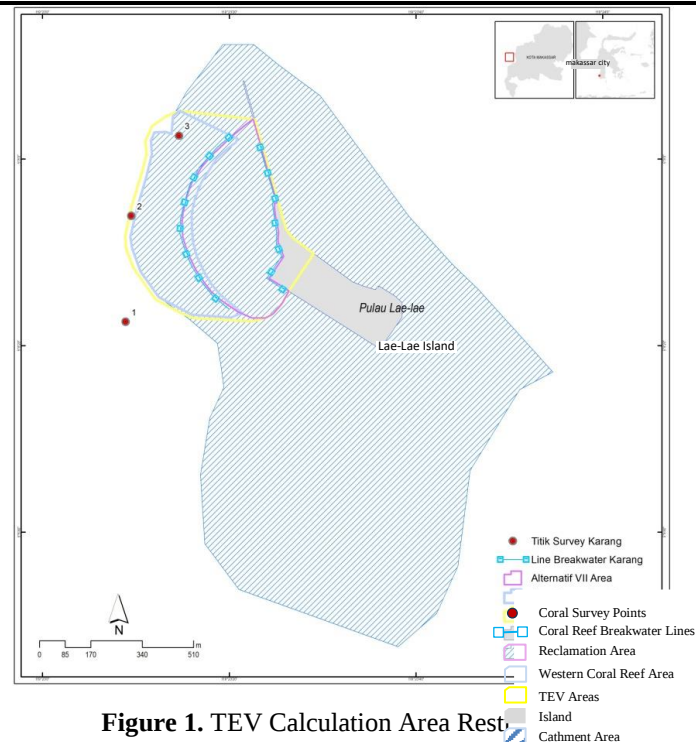


Figure 1. TEV Calculation Area Rest

The reclamation area touches a coral reef area of 1.2 Ha which is occupied by large massive corals with poor growth, and is a wave area due to the transition of the plate reef and the reef slope of Lae Lae Island. The breaking of waves that release strong energy is one of the factors that make it difficult for corals to grow and develop. The data collection results show that the percentage of occurrence of branched corals, table corals, and sheet corals is very low and even not found at all. The existence of coral reefs, although found in poor condition, still plays a role in the waters, which is marked by the existence of capture fisheries activities around the reef.

2.2 Data Collection Methods

The sampling method used for collecting travel cost data according to the method of Subardin and Yusuf (2011) is nonprobability sampling, especially to test the reliability of certain methods or measuring devices, with axial sampling techniques, namely samples taken from anyone who happens to exist.

For capture fisheries data collection according to the Ruban et.al (2021) method, namely by using purposive sampling techniques with the consideration that owners have data on average income per trip.

Identification of coral reefs using the RRA (Rapid Reef Assessment) method (Belford and Phillip, 2011), in the Lae Lae reclamation plan area only conducts "record on the spot" at certain times and locations of the observed area. The number of observation stations is 3 transects that extend westward starting from the beginning of the appearance of corals in the reef plate area towards the reef slope to a depth of 15 meters.

2.3 Data Analysis Methods

The total economic value (TEV) of resources on the island of Lae Lae is the cumulative sum of economic assessments of the benefits of resource utilization and the environment on the island of Lae Lae. The value of TEV is limited to the reclamation plan area and its surroundings in the western part of Lae Lae Island. The TEV assessment according to Samonte-Tan and Armedilla (2004) is based on the sum of direct use value (DUV), indirect use value (IUV), option value (OV), bequest value (BV) and existen value (EV).

$$TEV = DUV + IUV + OV + BV + EV$$

Barton, 1994 in Adrianto, 2006 defines the five categories as follows:

- Direct Use Value (DUV) is the economic value obtained from the direct use of a resource/ecosystem
- Indirect Use Value is the economic value obtained from the indirect use of a resource/ecosystem

- Option Value is the economic value obtained from the potential direct or indirect use of a resource/ecosystem in the future
- Bequest Value is the economic value obtained from the benefits of preserving resources/ecosystems for the benefit of future generations
- Existence Value is an economic value obtained from a perception that the existence of an ecosystem/resource exists, regardless of whether the ecosystem/resource is utilized or not.

2.3.1 Direct Use Value (DUV)

Indicators that include providing direct benefits to TEV, are tourism, capture fisheries, and the utilization of coral building materials.

a. Tour

The value of tourism benefits using the travel cost method is based on the simple concept of Harold Hotelling (1931) which was later developed by Clawson (1959) and Knetsch (1966) (Subardin, 2009). A simple method to calculate the travel costs that visitors can afford to enjoy tourist activities (Willingness to pay). It uses secondary data and some visitor respondent information. Information on visitor respondents for tourism purposes according to Fauzi (2004), in the form of visit frequency, travel costs, age, education age, income, distance of residence to tourist sites.

The number of visitors based on the survey, maximum reaches 400 people per week. Therefore, the number of respondents interviewed was 50 people.

The collected data is then tabulated according to respondent information, which is then analyzed by multiple linear regression (Tsania, 2019).

The results of the analysis obtained components a and b, which are used to calculate the consumer surplus of each visitor using the equation:

$$\begin{aligned}
 & \bullet \quad SK = \frac{V^2}{-2b} \\
 & \bullet \quad \text{Average SK of respondents} = \frac{SK}{\text{jumlah responden}} \\
 & \bullet \quad \text{Average SK respondents/visits} = \frac{\text{Rata-Rata SK responden}}{\text{total kunjungan semua responden}} \\
 & \bullet \quad \text{Tourism Economic Value} = (\text{Average SK respondents/visits}) \times (\text{Total Visits/year})
 \end{aligned}$$

Information:

SK = consumer surplus per respondent (IDR)

V = number of visits per respondent

b = multiple linear regression component

b. Catch Fisheries

Calculation of the economic value of capture by estimating economic rent. For conditions on Lae Lae island, the calculation of fisheries economic rent uses the following equation (Widhyantara, 2004):

$$Re = ((Pr - Pn) - L) \times N$$

Information:

Re = Rent savings (IDR)

Pr = Average income of fishermen (IDR)

Pn = Flat production of fishermen (IDR)

L = Profit (IDR) = 15% x (Pr - Pn)

N = Number of Fishermen

The area of traditional fisheries is about 148.7 Ha, and the area calculated by Total Economic Value in the western waters of Lae Lae Island is 29 Ha. So that the estimated value of direct utilization of traditional fisheries in the coral aquatic ecosystem area around this prospective reclamation is 19.5% of the total fishing area.

c. Corals as Building Materials

$$\text{Economic Value of Corals (Building Materials)/year} = \frac{Ltkd \times h \times Ur \times Hbp}{Ue}$$

Information:

$Ltkd$ = Area of degraded massive coral reefs (m²)

h = Average height of degraded massive corals (m)

Ur = unit rent

Hbp = Foundation stone price/m³ (IDR)

$Emirates$ = Economic life (years)

2.3.2 Indirect Use Value (DUV)

a. Corals as Coast Protection

$$\text{Economic Value of Corals (Building Materials)/year} = \frac{Ltkp \times h \times Hbg}{Ue}$$

Information:

$Ltkp$ = Area of massive coral reefs parallel to the coast on the reef plate (m²)

h = Average height of massive corals (m)

Hbg = Price of elephant stone/m³ (IDR)

$Emirates$ = Economic life

b. Fish Habitat Protection

$$\text{Economic Value of Corals (Protection of Fish Habitat)/year} = (Ltk \times Nng)$$

Information:

Ltk = Area of healthy coral reefs

Nng = Nilai Nursery Ground (IDR)

c. Carbon Sequestration Value

$$\text{Economic Value of Corals (carbon sequestration)} = (Ltk \times Pp) \times Npp$$

Information:

Ltk = Area of healthy coral reefs

Pp = Primary productivity (tons)

Npp = Primary Productivity Value (IDR)

3 Option Value (option value)

$$\text{Preferred Economic Value} = Ltk \times Nov$$

Information:

Ltk = Area of coral reefs

Nov = Preferred Value (IDR)

4 Existence Value

The calculation of the benefits of the existence of tourist sites according to the costs incurred by visitors entering the island of Lae Lae, and the costs incurred to stay.

$$\text{Economic Value of Existence} = + (Jp \times Htm)(Jr \times Hi \times 52)$$

Information:

Jp = Number of Visitors/year

Htm = Entrance fee (IDR)

Jr = Average number of houses rented/week

Hi = Stay/night charge (IDR)

5 Bequest Value

$$\text{Inherited Benefit Value} = 10\% \times \text{Direct Benefit Value}$$

(Haslindah, et.all., 2014)

3. RESULTS AND DISCUSSION

3.1 Identification

3.1.1 Coral Reef Conditions

The results of identification in the west of Lae Lae Island, the average percentage of live coral cover is 10.33% of acropora and non-acropora species, and 13.33% are dead corals covered with algae, other (soft coral, sponge) 12.67%, abiotic (sand, silt, gravel) of 55.33% and fleshy seaweed (macro algae) 8.33%. Low live coral cover according to MENLH Decree No.4 of 2001 is categorized as poor.

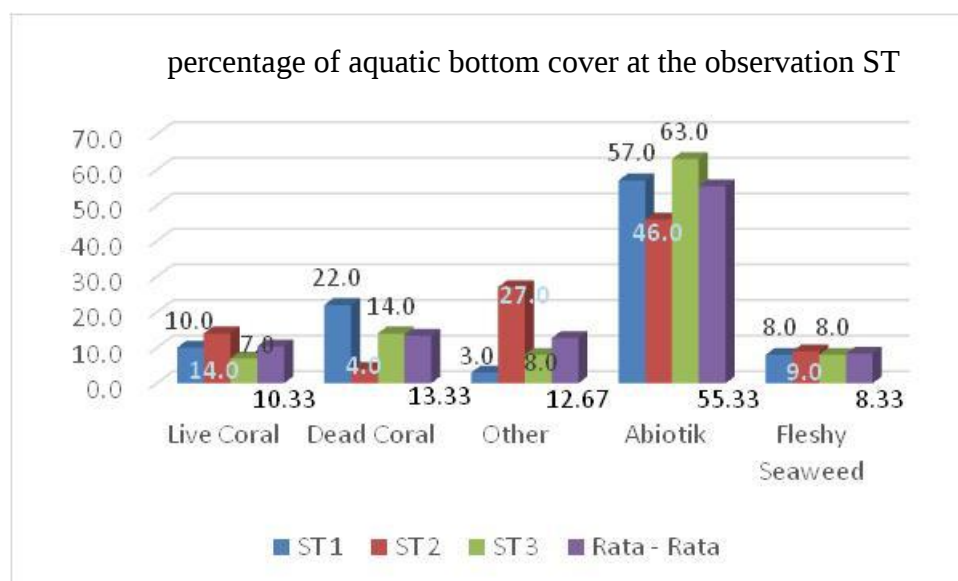


Figure 2. Percentage of Coral Cover in Western Waters of Lae Lae Island

The category of bad coral reefs is indicated by the presence of a fairly high sedimentation rate, as well as the location of the station where the wave bursts. The high sedimentation rate is because the two stations are waters that are very close to the main land of Makassar City, so that when there are tides and lows that usually occur slack water (still water). Poerbandono et al. (2005), the minimum or effective zero tide velocity occurs when the water level is highest or lowest (slack water) at which time there is a change in the direction of the tidal current. In this condition, causing floating sediment particles will settle to the bottom of the water and cover coral polyps so that they have the potential to kill living corals (Hubbard and Pocock, 1972 in Supriharyono, 2007). It can be seen from the results of visual observations, the dominant type of massive coral was found. Massive coral types that have tentacles and coral polyps in the large category will have a higher adaptation rate in areas with high

sedimentation (Tomascik et.al, 1997). The long tentacles possessed by massive coral types will allow coral animals to get rid of sediment particles that cover coral corallite with the help of currents, and are found on shallow reef flats that often occur wave blows (Barus et.al, 2018).

3.1.2 Tour

Lae Lae Island is one of the islands in Makassar, which is one of the tourist destinations. Its position is close to the mainland with a sea trip of about 5-10 minutes, using a pappalimbang boat. Although the condition of the coral is not good, but in the western part of the island still presents a stretch of white sand beach and which is an attraction and waters that become a place for swimming and snorkeling. Bamboo huts along the beach become a resting place for visitors and rented, as well as people's houses that can be a place to stay if someone stays overnight.

The condition of Lae Lae island is close to the mainland of Makassar City with several tourist sites around it. In addition to the stretch of white sand on Lae Lae Island, there are also Samalona Island, Gusung Island, Kayangan Island, and other islands that are far away. The existence of tourist islands provides business opportunities for the people of Lae Lae island for inter-island crossing services.

3.1.3 Catch Fisheries

Traditional fisheries are fishing activities with boats loaded with one and two people with fishing gear for rinta fishing rods, rawai fishing rods, squid fishing rods, arrows/pattes, and waring ambaring. Capture fisheries activities are in the waters around Lae Lae Island with an area around the island of 147.8 Ha (see Figure 1). Types of catches include: reef fish, small pelagic fish, squid, and rebon shrimp (ambaring). Fishing activities around Lae Lae Island are not entirely carried out throughout the year, but are seasonal, and at certain times only according to seasonal conditions, weather, and the position of the moon. Information on the income of fishermen on Lae Lae Island, as shown in table 1.

Table 1. Lae Lae Island Fishermen's Income by Type of Fishing Gear

Fisherman	operational/ day (Rp)	Operational Duration (Days)	result (Rp)	gross income (Rp)	Number of fishermen (people)
fishing rod rinta	45.000	90	150.000	105.000	48
fisherman fishing line	25.000	90	135.000	110.000	48
fisherman cumi -cumi	35.000	204	160.000	125.000	47
net fisherman	20.000	90	100.000	80.000	9
Arrow Fisherman	25.000	90	130.000	105.000	10
Ambaring net fisherman	25.000	150	130.000	105.000	162
Bubu Fisherman	45.000	90	350.000	305.000	164

Source: Field Survey Results in 2020

3.2 Result

3.2.1 Direct Value

a. Tour

The results of the interview, it is known that most respondents make one visit, the average travel cost is IDR 86,000,-, the average age is 32 years, the average education is 14 years, the average income is IDR 5,141,000, - and dominant from Makassar City. So that the average respondent consumer surplus was IDR 641,037,-, and the average visit was IDR 11,246,-. With the number of visits for a year of 20,800 visits, the economic value of tourism activities on Lae Lae Island is IDR 233,922,338,-.

Post-reclamation conditions, it is projected that there will be an increase in travel costs when heading to Lae Lae Island, with a prediction of an average travel cost of IDR 121,000,-, if other components are placed in the same conditions as existing conditions, then a consumer surplus of IDR 691,479,-, and an average visit of IDR 12,131,-

. With the number of visits during the year projected to increase by 52,000 visits, the economic value of tourism activities on Lae Lae Island is IDR 630,822,653,-.

b. Catch Fisheries

The area of traditional fisheries is about 148.7 Ha, and the area calculated by Total Economic Value in the western waters of Lae Lae Island is 29 Ha. So that the estimated value of direct utilization of traditional fisheries in the coral aquatic ecosystem area around this prospective reclamation is 19.5% of the total fishing area. So that from the five categories of traditional fisheries, the valuation value of the reclamation plan area is IDR 791,269,973 per year.

Post-reclamation conditions, it is projected that there will be a reduction in the area of capture fisheries land by 14.87 Ha (12.11 Ha of reclaimed land and 2.76 Ha of reclamation safety land), so that it becomes 133.8 Ha, and the area of water area calculated by total economic value to 14.13 Ha. With the projection of catches in existing conditions used, with a reduction in the area of traditional fishery waters causing a decrease in the economic value of catches, and reduced to IDR 385,539,473, - per year.

c. Corals as Building Materials

Taking coral as building material is no longer allowed. However, the existence of dead corals with algae cover, even though the category of coral is damaged, has the potential to still have economic value if viewed as a utilization for building foundation materials. The price of stone needs for building foundations is IDR 800.000^{·/7} m³ or IDR 114.286,-/m³. The area of coral reef land in the western waters of Lae Lae Island, is 13.14 Ha, with the distribution of dead coral covered with algae of 13.33%, then the potential volume of coral reserves is 8,760 m³.

The estimated value of unit rent is 81.6% of the selling price of coral as building material (Widhyantara, 2004), so that the economic value of coral reserves for building materials is IDR 816,932,571,-. With the economic life of a building for 25 years, the economic value per year is IDR 32,677,303,-.

Post-reclamation conditions, it is projected that there will be a reduction in coral reef area by 1.55 Ha, to 11.59 Ha, causing the economic value to be reduced to IDR 720,566,857,-. With an economic age of 25 years, the economic value per year is IDR 28,822,674,-.

3.2.2 Indirect Value

Indicators that include providing indirect benefits to TEV, are coastal protection, and fish habitat.

a. Beach Protection

The presence of coral in the shallow area of the plate reef can accelerate the occurrence of breaking waves, so that there is a reduction in wave height when arriving at the beach, and reduce the impact of coastal abrasion. To calculate the economic value of coral as a breakwater, what is considered is the length of the coral reef area above the reef plate and stretches in front of the coastline, which on Lae Lae Island is semicircular with a length of 675 meters, which is in front of the beach along 540 meters (see figure 1). The existence of massive corals bound to coral sand is equivalent to the value of elephant stone cubication and the work is worth IDR 300,000,-/m³. The area of massive coral in the reef plate area is 3.2 Ha, with a volume of 12,800 m³ (average height of 40 cm), so that the economic value of the reef is IDR3,840,000,000,-. Taking into account the economic life of 25 years, the economic value per year is IDR 153,600,000,-.

Post-reclamation conditions, it is projected that there will be a reduction in coral reef area by 1.55 Ha, causing the coral area to be 1.65 Ha with a volume of 6,600 m³. And a decrease in the economic value of coral as coastal protection, to IDR 1,980,000,000,-. With an economic age of 25 years, the economic value per year is IDR 79,200,000,-.

b. Fish Habitat Protection

Coral Reefs are one of the coastal ecosystems that become known fish habitats by calculating the percent of healthy coral cover in a large coral reef area, and estimating the value of making a simple cage as a nursery ground. The calculation of making a pond for nursery ground is IDR 4,000,-/m² (Suparmoko, et. all., 2003).

However, a long time span of 20 years, this value needs to be updated based on existing conditions. Therefore, in calculating using a simple cage manufacturing cost approach using paralon pipe materials, and waring. By using this material, an estimated value of IDR 188.000,-/m² or IDR 1.880.000.000,-/Ha. It is estimated that the rejuvenation of the pool takes 5 years, so the maintenance cost for a year is IDR 376.000.000,-/Ha/year.

The area of coral reefs in the western part of Lae Lae Island is 13.14 Ha, with a healthy coral distribution of 10.33%, the economic value of coral reefs as fish habitat protectors is IDR 510,532,800,-/year.

Post-reclamation conditions, the area of coral reefs is predicted to decrease to 11.59 Ha, assuming the quality does not change, there will be a decrease in the economic value of coral reefs to IDR 450,310,133,-/year.

c. Economic Value of Carbon Absorption

In addition to mangrove ecosystems that can store carbon content and absorb carbon dioxide (CO₂) gas, coral reef ecosystems also have the same role. The value of carbon sequestration by coral reefs can be calculated based on the primary productivity standard of coral reefs of 2,500 gr/m²/year (Soemarwoto, 2001 in Zamdial, et. all., 2019). Furthermore, it was explained that the value of 1 ton of carbon ranged from US \$ 1-US \$ 28. As an assumption of a price of US \$ 10 per ton or equivalent to IDR 150,000, - per ton. So every 1 hectare of coral reef has a primary productivity of 10,000 x 2,500 gr = 25,000,000 gr or 25 tons). The area of coral in the western part of Lae Lae Island is 13.14 ha, so the economic value of carbon sequestration is IDR 49,275,000 per year.

Post-reclamation conditions, with the reduction in coral reef area, there was a decrease in economic value to IDR 43,462,500,-.

3.2.3 Option Value

Calculation of selected benefit values based on biodiversity in coral reef ecosystems (Zamdial, et. all, 2019). The estimated value of choice of coral reef ecosystems according to Bruce, et.all (1999) is US \$ 120 per hectare per year (Asadi, M. A., Andrimida, A., 2017). Based on the area of good and dead coral reefs, which is 3.11 Ha, with a dollar exchange rate of IDR 15,000,-, so that the value of selected benefits is IDR 5,597,640, - per year.

Post-reclamation conditions, the area of good and dead coral reefs is reduced to 2.74 Ha, so that the value of selected benefits is reduced to IDR 4,937,340, - per year.

3.2.4 Existence Value

The existing landscape value is a non-use value that is used by the community to trade and serves as a tourist location on the nearest island of the main land (Makassar). If the interest of tourists per week reaches an average of 400 people, in one year it is estimated that there are 20,800 tourists. The current area entrance levy is IDR 5,000, - with details of IDR 2,000, - for the construction of mosques and IDR 3000 for managers, so that the total existing value within one year reaches IDR 104,000,000,-.

The land on the island of Lae Lae is a dense residential area for islanders. In the area calculated Total Economic Value, there are 65 people's houses and also the existence of a stretch of white sand in the western part of the island and become a tourist spot. 65 houses, can rent one room if there are visitors who want to stay on the island at a cost of IDR75.000,- per night. On the white sand beach land, there are also bamboo huts that are rented all day with a value of IDR 50,000,-. Assuming tourism activities with visitors staying at people's houses as much as 2% of the number of visitors, with fully rented bamboo huts, then the economic value of the land in the TEV calculation area reaches IDR 56,550,000, - per year.

The total value of existence benefits before reclamation reached IDR 160,550,000,-

Post-reclamation conditions, it is projected that there will be an increase in the cost of entrance ticket prices to IDR 10,000,-. Assuming there is an increase in visitors by 150% or 52,000 people/year. The economic value produced is IDR 520.000.000,-/year.

The land area of TEV increased from 1.86 Ha to 13.97 Ha. There was a significant increase. The reclamation land plan is under the ownership of the South Sulawesi Provincial Government, with plans for the development of beach tourism. With plans for the existence of cottage buildings, swimming pools, food courts, restaurants, based

on the empowerment of the Lae Lae Island community on an area of 6.6 Ha. It is assumed that there is a land rental for the construction of facilities, with a land rental value of IDR 20,000,-/m²., and there is still lodging in people's houses IDR 75,000,- per night. So that the economic value of reclaimed land is IDR 1,320,000,000,-/year.

The total value of existence benefits after reclamation reaches Rp 1,865,350,000,-/year.

3.2.5 Bequest Value

This value relates to the function and future use of the ecosystem (Cesar and van Beukering, 2004). The value of heritage benefits is calculated through the identification of community traditions in preserving resources/ecosystems for the benefit of future generations. The traditional feast that is an annual tradition of the Lae Lae island people is Maccera Tasi'. At the Maccera Tasi' ceremony, advice is usually given by the traditional leader (Bugis Makassar) on how to care for the sea with environmentally friendly fishing gear. Maccera tasi activities are carried out by individual boat owners before the departure of fishermen to catch fish with a trip duration of 1 – 2 months.

Although this tradition lasts from year to year, it cannot be calculated by directly approaching market value. So to calculate the value of inheritance it is estimated that the value of inheritance is not less than 10% of the direct benefits of the ecosystem (Haslindah, et. all, 2014).

3.3 Total Economic Value of the Western Waters of Lae lae Island

The results of the calculation of the economic value of each category of Total Economic Value (TEV) in the waters west of Lae Lae Island are then summed to obtain the Economic Benefit Value (TEV). The TEV value obtained at the TEV study location in the existing/current condition of IDR 2,043,212,016,-. And if reclaimed land is formed and its utilization there is an increase in TEV value of IDR 3,592,963,254,-.

4. CONCLUSIONS AND SUGGESTION

The total total economic benefit on the West Coast area of Lae Lae Island before reclamation is IDR 2,043,212,016,- per year. The highest economic benefit value from capture fisheries benefits was 38.01%, followed by fish habitat protection benefits of 24.53%, tourism benefits of 11.24%, and the lowest was the choice benefit of 0.27%.

The projected total total economic benefit on the West Coast area of Lae Lae Island after reclamation is IDR 3,592,954,633,- per year. The highest economic benefit value of existence benefits was 51.92%, followed by tourism benefits of 17.56%, fish habitat protection benefits of 12.53%, and the lowest was the choice benefit of 0.14%.

The benefits of existence are projected to increase rapidly after reclamation if tourism development goes well on Lae Lae Island, which is supported by adequate tourism facilities and infrastructure.

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